

In the Claims:

1. (Currently Amended) A method of forming a conductive pattern in a mold layer, the method comprising:

removing a portion of a barrier layer outside an intaglio pattern in a mold layer to expose an upper surface of an oxide layer included in the mold layer and avoiding removing a portion of the barrier layer on the intaglio pattern;

forming a conductive layer on the portion of the barrier layer on the intaglio pattern and on the upper surface ~~of the mold layer~~; and

removing the conductive layer from the upper surface ~~of the mold layer~~.

2. (Original) A method according to Claim 1 wherein the barrier layer comprises a first barrier layer, the mold layer comprises a first mold layer, the intaglio pattern comprises a contact hole in the first mold layer, and the conductive layer comprises a first conductive layer, the method further comprising:

forming a groove in a second mold layer on the first mold layer, the groove being disposed above the first conductive layer in the contact hole;

forming a second barrier layer on an upper surface of the second mold layer and in the groove;

forming a flowable material on the second barrier layer;

removing a portion of the flowable material and a portion of the second barrier layer outside the groove and avoiding removing a portion of the flowable material and a portion of the second barrier layer inside the groove;

removing the portion of the flowable material from inside the groove;

forming a second conductive layer on the second barrier layer; and

removing a portion of the second conductive layer from outside groove and avoiding removing a portion of the second conductive layer inside the groove.

3. (Original) A method according to Claim 1 wherein the intaglio pattern is formed by:

forming a contact hole in the mold layer; and
forming a groove in the mold layer above on the contact hole.

4. (Original) A method according to Claim 3 wherein forming the conductive layer comprises forming the conductive layer in the contact hole and in the groove.

5. (Original) A method according to Claim 3 wherein forming the contact hole and forming the groove comprises:

sequentially forming a first interlayer dielectric and a second interlayer dielectric on a substrate;

patterning the second interlayer dielectric to form a groove exposing a predetermined region of the first interlayer dielectric; and

patterning the exposed first interlayer dielectric to form a contact hole exposing a predetermined region of the substrate, wherein the first and second interlayer dielectric layers comprise the mold layer.

6. (Original) A method according to Claim 1 wherein the barrier layer comprises at least one material selected from the group consisting of Ti, Ta, TiN, Ti/TiN, TaN, Ta/TaN, and WN.

7. (Original) A method according to Claim 2 wherein the flowable material layer comprises a material having an etch selectivity with respect to the mold layer.

8. (Original) A method according to Claim 7 wherein the flowable material layer comprises a photoresist.

9. (Original) A method according to Claim 8 wherein the flowable material is removed using a developer.

10. (Original) A method according to Claim 8 wherein the flowable material is removed by an ashing process.

11. (Original) A method according to Claim 8 wherein the flowable material layer comprises SOG (spin on glass).

12. (Original) A method according to Claim 11 wherein the flowable material pattern is removed using either one of a phosphoric acid containing solution and a fluoric acid containing solution.

13. (Original) A method according to Claim 1 wherein the conductive layer comprises aluminum.

14. (Original) A method according to Claim 13 wherein forming the conductive layer comprises forming the aluminum layer by chemical vapor deposition (CVD) or sputtering.

15. (Original) A method according to Claim 14 wherein forming the aluminum layer further comprises:

performing a reflow process for a substrate including the deposited aluminum layer.

16. (Original) A method according to Claim 1 wherein the conductive layer comprises one of copper and tungsten.

17. (Original) A method according to Claim 1 after forming the conductive layer:

planarizing the conductive layer to expose the upper surface of the mold layer to form a metal pattern in the intaglio pattern.

18. · (Original) A method according to Claim 17 wherein planarizing the conductive layer comprises planarizing using a chemical mechanical polishing (CMP) process.

19. (Currently Amended) A method of forming a conductive pattern in a mold layer, the method comprising:

forming a contact hole in a first mold layer on a lower conductive pattern;

forming a first barrier layer in the contact hole and outside the contact hole on [[an]] a first upper surface of an oxide layer included in the first mold layer;

forming a first flowable material on the barrier layer;

removing the first flowable material to expose the upper surface ~~of the first mold layer~~ and to avoid removing the first flowable material from inside the contact hole;

removing the first flowable material from inside the contact hole;

forming a first conductive layer in the contact hole and on the exposed upper surface ~~of the first mold layer~~;

removing the first conductive layer to expose the upper surface ~~of the first mold layer~~ and to avoid removing the first conductive layer from inside the contact hole;

forming a second mold layer on the first mold layer;

forming a groove in the second mold layer on the contact hole;

forming a second barrier layer in the groove and outside the groove on [[an]] a second upper surface of an oxide layer included in the second mold layer;

forming a second flowable material on the second barrier layer;

removing the second flowable material to expose the second upper surface ~~of the second mold layer~~ and to avoid removing the second flowable material from inside the groove;

removing the second flowable material from inside the groove;
forming a second conductive layer in the groove and on the exposed second upper surface ~~of the second mold layer~~; and
removing the second conductive layer to expose the second upper surface ~~of the second mold layer~~ and to avoid removing the second conductive layer from inside the groove.

20. (Currently Amended) A method of forming a conductive pattern in a mold layer, the method comprising:

forming a contact hole in a mold layer on a lower conductive pattern;
forming a groove on the contact hole, the groove being wider than the contact hole;
forming a barrier layer in the groove and outside the groove on an upper surface ~~of an oxide layer included in~~ the mold layer;
forming a flowable material on the barrier layer;
removing the flowable material to expose the upper surface ~~of the mold layer~~ and to avoid removing the flowable material from inside the groove;
removing the flowable material from inside the groove;
forming a conductive layer in the groove and on the exposed upper surface ~~of the mold layer~~; and
removing the conductive layer to expose the upper surface ~~of the mold layer~~ and to avoid removing the conductive layer from inside the groove.